

### Listing of Claims

1. (Currently Amended) An image processing unit ~~(5)~~ which comprises
  - an input for the signal of a current image ~~(8)~~ of a body volume, the body volume being subject to a motion comprising several phases of motion;
  - at least one input for a signal ~~(9)~~ which represents the phase of motion of the body volume which belongs to the current image ~~(8)~~;
  - a memory ~~(4)~~ in which previous images of the body volume are stored together with the associated phases of motion,
 the image processing unit ~~(5)~~ being arranged to associate with the current image ~~(8)~~ that previous image ~~(10a)~~ from among the previous images whose phase of motion is closest to the phase of motion of the current image.
  
2. (Currently Amended) An image processing unit as claimed in claim 1, which is arranged to determine ~~the~~ a distance between the phases of motion of the current image ~~(8)~~ and an associated previous image ~~(10a)~~ and/or the time elapsed since the last association and to reproduce ~~it~~ said distance for a user.
  
3. (Currently Amended) An image processing unit as claimed in claim 1, ~~characterized in that~~ wherein the body volume is a biological body volume and the motion of the body volume is caused by heartbeat and/or respiration, and that the phase of motion is detected by means of an electrocardiogram and/or by the signal from a respiration sensor.
  
4. (Currently Amended) An image processing unit as claimed in claim 1, which is arranged to carry out the following steps ~~of the method~~:
  - calculation of a similarity measure ~~( $r$ )~~ between the current image ~~(8)~~ and a representative image ~~(R)~~;
  - calculation of the similarity measures between the representative image ~~(R)~~ and the previous images or a sub-quantity thereof; and
  - selection of those previous images ~~(U)~~ whose similarity measure relative to the representative image ~~(R)~~ lies in a predetermined range ~~( $r \pm \Delta$ )~~ around the similarity measure ~~( $r$ )~~ of the current image ~~(8)~~ relative to the representative image ~~(R)~~.

5. (Currently Amended) An image processing unit as claimed in claim 1, which is arranged to carry out the following steps ~~of the method~~:

- calculation of the similarity measures (~~r'~~) between the current image (~~8~~) and the previous images or a sub-quantity (~~U~~) thereof; and
- selection of those previous images (~~V~~) whose similarity to the current image exceeds a predetermined threshold value.

6. (Currently Amended) An image processing unit as claimed in claim 1, ~~characterized in that, wherein~~ together with each previous image there are stored the associated electrocardiogram and the relative instant of the image acquisition, and that the image processing unit is arranged to carry out the following steps ~~of the method~~:

- determination of a transformation which maps the electrocardiograms of the current image and a previous image one onto the other; and
- determination of the relative position of the phase of motion of the current image and the previous image, as expressed in the electrocardiogram, by means of the transformation.

7. (Currently Amended) An image processing unit as claimed in claim 1, which is arranged to carry out a motion correction for a motion of the entire body volume between the current image (~~8~~) and the associated previous image (~~10a~~).

8. (Currently Amended) An image processing unit as claimed in claim 1, ~~characterized in that, wherein it said image processing unit~~ is coupled to a reproduction unit (~~7~~) and is arranged to reproduce the current image (~~8~~) and the associated previous image (~~10a~~) in superposed form on the reproduction unit.

9. (Currently Amended) A method of associating a current image (~~8~~) of a body volume which is subject to a motion comprising different phases of motion with one (~~10a~~) of several previous images of the body volume, in which method comprises the steps of:

- the phase of motion is determined together with ~~the~~ a set of relevant images; and

- the current image (8) is associated with that one (10a) of the previous images ~~whose~~ which has a phase of motion is closest to the phase of motion of the current image.

10. (Currently Amended) A method as claimed in claim 9, ~~characterized in that~~ wherein the a distance between the phases of motion of the current image and the associated previous image and/or the time elapsed since the last association ~~are~~ is determined and reproduced for the user.

11. (New) A unit for associating a current image of a body volume which is subject to motion comprising different phases of motion with one of a plurality of previous images of the body volume comprising:

a means for determining the phase of motion together with a set of relevant images; and

a means for associating the current image with one of the previous images which has a phase of motion closest to the phase of motion of the current image.

12. (New) The unit of claim 11, further comprising a means for determining a distance between the phases of motion of the current image and the associated previous image and/or the elapsed time since the last association.